REMARKS

Claims 15-20 have been canceled. Claims 9-14 have been amended. New method claims 24-29 have been added. Support for the new claims may be found on page 13, line 1 to page 14, line 2 of the specification and FIG. 6. Also, new apparatus claims 30-37, which are essentially the same as previously withdrawn claims 1-8, have been added. Claims 9-15 previously directed to a printer controller have been canceled or amended so as to depend on new claim 30 that is directed to a cable. Claims 9-14 & 24-37 are currently pending in the present application. No new matter has been added. Reexamination and reconsideration of the application are respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. 103(a)

Pages 2 to 7 of the Action set forth claim rejections based on 35 U.S.C. 103(a). The Action relies upon the combination of two or more references to support the obviousness rejections. These combinations are contested as improper for the reasons advanced below. However, even if these combinations were proper, which is not conceded, the resulting combinations would still fail to teach or suggest the specific limitations set forth by the claimed invention.

Claims 9-15 are rejected under 35 U.S.C. 103(a) for the reasons set forth on pages 2 to 5 of the Action. Specifically, claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirst et al (U.S. Pat. No. 5,930,553, hereinafter

referred to as "Hirst" or "the Hirst reference") in view of Fackler et al. (U.S. Pat. No. 5,729,204, hereinafter referred to as "Fackler" or "the Fackler reference").

Hirst is cited for teaching a printer controller as claimed. Specifically, FIG. 1 (e.g., elements 13, 12, 15, 30, 31), FIG. 3 and col. 2, lines 40-50, col. 4, lines 45-67 and col. 5, lines 15-25 and lines 38-52 of Hirst are cited for teaching all the elements of the claimed invention except that printer controller 13 is disposed in a cable external to the printer.

Fackler is cited for teaching a cable that includes a controller that is external to a printer. Specifically, FIG. 1, FIG. 2 and col. 2, lines 10-65 and Abstract of Fackler are cited for this teaching. It is respectfully submitted that the combination of Hirst and Fackler fails to teach or suggest the cable as claimed.

Printer cables are familiar to computer users and include a plurality of electrodes (e.g., a parallel cable or USB cable) for communicating data to be printed from a computer (e.g., a PC or lap top) to the printer. The cited references do not fairly teach or suggest configuring a cable so that it includes a printer controller as claimed. As described in the Background section of the application, prior art laser printers are configured to include the printer controller in the printer enclosure with the print engine as shown in Hirst.

It is a tenuous argument to suggest that one skilled in the art would arrive at the claimed invention by selecting the printer controller 13 from Hirst and combining it with the cable of Fackler et al., where in fact Hirst teaches disposing the printer controller 13 in the printer enclosure 11, and Fackler et al. teaches a cable with a

structure, form, function, and application that is very different from that of a printer controller as claimed. Furthermore, it is respectfully submitted that one skilled in the art would not have arrived at the claimed invention without the improper use of hindsight gleaned from the teachings of the present invention.

As argued previously, the image forming device 10 of the Hirst reference includes a housing 11 that houses electronic components, such as a print engine 12, a printer controller 13, a formatter 14, etc. (see FIG. 1, and col. 4, lines 24-37). Specifically, the Hirst reference teaches that the print engine 12 and printer controller 13 are disposed in the housing 11 of the imaging forming device (see, col. 4, lines 24-37). FIG. 1 also clearly indicates or shows that the printer controller 13 is disposed in the printer housing 11 with the print engine, which as described in the background section of the current application, is the configuration of prior art laser printers.

One novel aspect of the invention as claimed is to remove the printer controller from the printer enclosure and to instead dispose the printer controller in a printer cable. By so doing, several significant disadvantages of the prior art printer configuration are overcome, and efficiencies and advantages are achieved by the claimed invention. The lack of implementation by others in the marketplace indicates that the invention as claimed is not obvious. Furthermore, the claimed invention goes against and is contrary to what the prior art teaches and what the printer manufacturers are pursuing. For example, the industry is integrating the printer controller with the print engine or other components (e.g., laser controller) inside the printer, as described in the Background on pages 2 and 3. Also, the recognition by the present inventors of a previously

unrecognized problem (i.e., inability by user to upgrade printer controller) militates in favor of patentability and against obviousness.

In contrast, Hirst does not fairly teach or suggest disposing the printer controller 13 in the printer cable 15. In fact, Hirst teaches away from the claimed invention by showing the printer controller 13 in the printer enclosure 11, which as noted previously, is the prior art configuration for printers.

Flacker et al. is directed to improving prior art data acquisition units or boards (col. 1, lines 27-59) that function to assist a host device to communicate and access peripheral devices (e.g., information retrieval systems). The improved data acquisition board of Flacker et al. has nothing to do with printer controllers or printers for that matter. Moreover, Flacker et al. does not fairly teach or suggest placing a printer controller in a printer cable as claimed.

Furthermore, the "controllers" of Fackler do not fairly teach or suggest the cable with printer controller as claimed. The controllers of Fackler are described and referred to as switches 30A to 30C (col. 5, lines 25-35) that establish a data path for data to flow between a particular device (e.g., peripheral device) and the host 12. These controllers of Fackler have nothing to do with printing.

Moreover, the cable of Fackler performs a very different function than the printer controller disposed in a cable as claimed. Whereas Fackler's cable operates as an electronic switch that establishes a data pathway between host device 12 and a peripheral device (see, col. 5, lines 24-34), the claimed invention performs printer

controller functions, which are very different from the data flow control and selective access functions of Fackler's cable (col. 2, lines 10-17).

Stated differently, it is a strained interpretation to equate the cable of Fackler that switches data between a host device 12 and the peripheral devices 14 with a printer controller disposed in a cable as claimed. Moreover, Fackler does not cure the deficiencies of Hirst noted previously.

It is noted that dependent claims 31-37 incorporate all the limitations of independent claim 30. Furthermore, the dependent claims also add additional limitations, thereby making the dependent claims a fortiori and independently patentable over the cited references. For example, Hirst, whether alone or in combination, fails to teach or suggest, "a cable format conversion mechanism for converting signals in a first format into corresponding signals in a second format," as recited by claim 31. Similarly, Hirst, whether alone or in combination, fails to teach or suggest, "a multiple target device support mechanism for supporting at least two different types of target devices," as recited by claim 32. Moreover, Hirst, whether alone or in combination, fails to teach or suggest the limitations directed to the multiple target device support mechanism as recited by claim 33, limitations directed to the print engine ready data interface as recited by claims 34, 35 and 37, and limitations directed to the print controller ready interface as recited by claim 36.

In view of the foregoing, it is respectfully submitted that the Hirst reference, whether alone or in combination with the Fackler reference, fails to teach or suggest the

cable as claimed. Accordingly, it is respectfully requested that the claim rejections under 35 U.S.C. Section 103(a) be withdrawn.

Claims 16-20 are rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 3 on pages 5-6 of the Action. Specifically, claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirst et al (U.S. Pat. No. 5,930,553, hereinafter referred to as "Hirst" or "the Hirst reference") in view of Terashima et al. (U.S. Pat. No. 6,538,762, hereinafter referred to as "Terashima" or "the Terashima reference"). Terashima is cited for teaching that the printer controller is external to the printer. Specifically, FIGS. 1-4 are cited for this teaching. This rejection is respectfully traversed as applied to new method claims 24-29.

Typically, in the prior art, the printer controller is assembled with the print engine, and the assembly is disposed in a printer's enclosure (as shown in Hirst). The printer controller cannot be replaced without intervention of the printer manufacturer, who is responsible for integrating the print engine, printer controller, and other components of the printer.

As described previously, one novel aspect of the invention is the provision of a printer controller in a cable that can be easily replaced or upgraded by a user. For example, replacing or upgrading a printer controller can be accomplished through the purchase of a new cable that includes a new printer controller that provides new features, etc. The method of replacing the printer controller in an easy and efficient manner is recited in new claims 24-29.

Specifically, the Hirst reference, whether alone or in combination with the Terashima reference, fails to teach or suggest inter alia the following claim limitations: "dis-connecting the first cable from the host and the printer; connecting the host to the printer with a second cable that includes a second printer controller; and automatically determining whether the second printer controller is compatible with a print engine disposed in the printer and printing software disposed in the host," as claimed in claim 16.

It is noted that dependent claims 25-29 incorporate all the limitations of independent claim 24. Furthermore, the dependent claims also add additional limitations, thereby making the dependent claims a fortiori and independently patentable over the cited references.

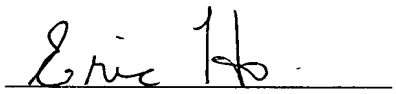
In view of the foregoing, it is respectfully submitted that the Hirst reference, whether alone or in combination with the Terashima reference, fails to teach or suggest the cable and method of replacing the printer controller as claimed. Accordingly, it is respectfully requested that the claim rejections under 35 U.S.C. Section 103(a) be withdrawn.

Claim 20 is rejected under 35 U.S.C. 103(a) for the reasons set forth in paragraph 4 on pages 6-7 of the Action. Specifically, claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirst and Terashima et al. (U.S. Pat. No. 6,538,762, hereinafter referred to as "Terashima" or "the Terashima reference") and further in view of Austin (U.S. Pat. No. 6,665,089, hereinafter referred to as "Austin" or "the Austin reference").

Austin is cited for teaching performing a cyclic redundancy check on the printer controller program. Specifically, FIG. 18 and col. 12 lines 60-67 to col. 13, lines 1-30 are cited for this teaching. However, it is respectfully submitted that the combination of Hirst, Terashima, and Austin fails to teach or suggest the invention as claimed for the same reasons as advanced previously. Stated differently, Austin does not cure the deficiencies of Hirst and Terashima. Accordingly, it is respectfully requested that the claim rejections under 35 U.S.C. Section 103(a) be withdrawn.

For all the reasons advanced above, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the pending claims are requested, and allowance is earnestly solicited at an early date. The Examiner is invited to telephone the undersigned if the Examiner has any suggestions, thoughts or comments, which might expedite the prosecution of this case.

Respectfully submitted,



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Dated: August 15, 2005
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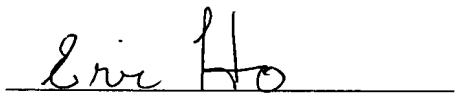

Eric Ho (RN 39,711) Aug. 15, 2005 (Date)